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Perceptions of social norms surrounding digital piracy: The effect of social projection and communication exposure on injunctive and descriptive social norms

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ABSTRACT

Using a national sample of 620 Internet users in the US, this study examined the extent to which social projection, communication exposure, and an interaction between the two, influenced individuals' perceptions about two subordinate types of social norms surrounding digital piracy: injunctive norms and descriptive norms. In line with the social projection model, individuals made social estimates about others' piracy attitudes and behaviors anchoring on their own personal attitudes and behavior. However, frequent communication exposure reduced the degree to which they relied on this egocentric thought process. In addition, the two-way interaction was contingent on another condition (perceiver's own piracy behavior) indicating that communication exposure had differing implications for pirates and non-pirates. Theoretical and practical implications are discussed.

1. Introduction

Digital piracy, or obtaining unauthorized copyrighted materials via peer-to-peer sharing networks and websites, is a controversial issue. On the one hand, digital piracy represents novel ways of media distribution and media consumption, such as remix cultures and sampling (Bounie, Bourreau, & Waelbroeck, 2005). On the other hand, it also entails moral dilemmas and illegitimate media use to the extent that it involves copyright infringement (Larose & Kim, 2007) and thereby imposes a threat to the software and media industries (Yoon, 2011). Recording industry analysts report that approximately 28% of Internet users around the globe access unauthorized content on a monthly basis (IFPI, 2012). Similarly, 57% of Internet users worldwide admit to pirating software, resulting in reported annual losses of $63.4 billion (Business Software Alliance, 2012). Although strong support for intellectual property exists in principle (71%), most digital pirates are not motivated to change their present behavior (Business Software Alliance, 2012).

Previous studies about digital piracy have revealed that perceptions of positive social norms are a key reason for the pervasiveness of this behavior in society. Even when moral intensity and risk judgment about digital piracy are high, many still engage in this behavior because they perceive it to be prevalent or even normative (Nandedkar & Midha, 2012; Yu, 2012). Likewise, several studies have demonstrated that digital piracy behavior is positively associated with various types of social norms perceptions such as the perceived prevalence of piracy (Chung & Cho, 2009; Jacobs, Heuvelman, Tan, & Peters, 2012; Yu, 2012), social pressure (Al-Rafee & Cronan, 2006; Peace, Galletta, & Thong, 2003), social approval (Wang & McClung, 2011), and peer pressure (Lau, 2006).

This study is motivated by the following gap in previous digital piracy literature. Though many studies have confirmed the significant impact of social norms on digital piracy behavior, surprisingly little is known about the underlying mechanisms central to normative influences: that is, how people generate their social norms perceptions about digital piracy. People often overestimate the prevalence of behavior or interpret social norms in a self-serving way, reinforcing their unhealthy, unethical, or otherwise deviant behavior (Vandello, Ransom, Hettinger, & Askew, 2009). It is therefore imperative to examine how social norms perceptions regarding digital piracy are constructed through different theoretical mechanisms or sources.

To do this, this study employs the social projection model (Krueger, 2007; Ross & Sicoly, 1979), communication models of social norms (e.g., Lapinski & Rimal, 2005), and a focus theory of normative conduct (Cialdini, Reno, & Kallgren, 1990) as theoretical frameworks. Using a national sample of 620 Internet users in the US, the present study empirically examines the extent to which social projection, communication exposure, and an interaction

between the two, influence individuals' perceptions about social norms surrounding digital piracy. Particularly, we focus on the interaction between social projection and communication processes in order to illuminate how social estimates based on egocentric thought processes (i.e., social projection) and social learning (i.e., communication exposure) compete with or reinforce each other.

To the best of our knowledge, no prior research has examined the origins of social norms perceptions regarding digital piracy. This study thus aims to make novel contributions by specifying the processes through which people make inferences about the normative environment surrounding piracy behavior. Doing so will also help practitioners develop better strategies for addressing important social factors that contribute to digital piracy.

2. Literature review and hypothesis development

The following section will review the present study's theoretical background and related empirical work. In summary, social norms research (e.g., Cialdini et al., 1990) distinguishes between two distinct types of social norms: descriptive norms and injunctive norms. Drawing on the social projection model (Krueger, 2007; Ross & Sicoly, 1979) and communication models of social norms (e.g., Lapinski & Rimal, 2005), we explore the ways in which projections based on personal dispositions (i.e., social projection) and social estimates based on other-referent information (i.e., communication exposure) influence perceptions of injunctive norms and descriptive norms regarding digital piracy. Fig. 1 visually summarizes the conceptual framework of this study.[1] Detailed discussions about the theoretical frameworks and research hypotheses are presented below.

2.1. Social norms and digital piracy

Researchers have conceptualized social norms in several different ways, most commonly as subjective norms, injunctive norms, and descriptive norms (Ajzen & Fishbein, 1980; Cialdini et al., 1990; Park & Smith, 2007). While subjective norms refer to the perceived social pressure on an individual to perform or not to perform a given behavior (Ajzen & Fishbein, 1980), descriptive and injunctive norms indicate perceptions of others' attitudes and behaviors. Specifically, the former refers to the perceived prevalence of a given behavior (i.e., "what others do"), while the latter indicates the perceived prevalence of positive/negative attitudes toward the behavior (i.e., "what others approve or disapprove of") (Cialdini et al., 1990). In this study, we focus on descriptive and injunctive norms because they indicate perceptions of others' attitudes and behaviors, and are thus central to the formation of social norms perceptions (Cialdini, 2003).[2]

Social norms influence human actions through various processes. Social norms motivate behavior by promising social rewards or sanctions (Ajzen & Fishbein, 1980; Maloney, Lapinski, & Neuberger, 2013) as well as by providing evidence to probable adaptive action (Cialdini, 2003; Cialdini et al., 1990). According to a focus theory of normative conduct (Cialdini et al., 1990), people are likely to engage in an action when they perceive it to be socially approved by many others (i.e., injunctive norms) and prevalent in society (i.e., descriptive norms). Although the perceived prevalence of behavior among others is closely linked to the perception of the extent to which others approve of it, descriptive and injunctive norms are thought to be distinct types because there are situations in which they do not align (Cialdini et al., 1990; Lapinski & Rimal, 2005; Park & Smith, 2007). This is particularly plausible in the context of digital piracy, where people may perceive the behavior in question to be socially unacceptable yet prevalent in society.

Numerous studies have shown that social norms have a significant impact on human actions, including unhealthy or illegal behavior (Linos & Kawachi, 2012; Rivis & Sheeran, 2003). Injunctive norms positively influence smoking cessation (van den Putte, Yzer, & Brunsting, 2005) and reduce adolescent substance use (Elek, Miller-Day, & Hecht, 2006). However, descriptive norms significantly contribute to variance in behavioral intent beyond injunctive norms in various contexts, such as positively predicting the intention to use drugs (McMillan & Conner, 2003).

Several studies have examined the effects of descriptive and injunctive norms on digital piracy. Descriptive norms, or the belief that downloading behavior is prevalent, results in stronger tendencies to engage in illegal downloading of movies (Jacobs et al., 2012; Yu, 2012). Descriptive norms also have an indirect impact on music downloading via deficient self-regulation, thus individuals who are unable to control their downloading behavior are be more likely to refer to their perceptions of prevalence of digital piracy to justify their own actions (LaRose & Kim, 2007). The role of injunctive norms has been tested using a related concept, subjective norms. Specifically, the perception that significant others disapprove of downloading behavior results in lower downloading intentions and more negative attitudes toward piracy (Al-Rafee & Cronan, 2006; Peace et al., 2003; Yoon, 2011). Similarly, strong social consensus among individuals that other people consider digital piracy to be unethical is positively related to the recognition that digital piracy is an ethical issue (Bateman, Valentine, & Rittenburg, 2013). On the other hand, if individuals perceive others' attitudes toward piracy to be favorable, they are more likely to have positive attitudes toward piracy themselves as well as higher levels of intentions to engage in digital piracy (Morton & Koufteros, 2008).

2.2. Social norms perceptions

Taken together, past work suggests that perceptions of social norms significantly influence digital piracy behavior. As noted earlier, relatively little is known about the first step involved in normative influences: how people make social estimates about others' attitudes and behavior regarding digital piracy. In this study, we focus on the origins of normative influences by examining the extent to which social projection and communication exposure influence social norms perceptions.

2.3. Social projection model

The social projection model suggests that people use a judgmental heuristic that allows them to make quick predictions about others anchoring on their own attitudes and behavior (Krueger, 2007; Krueger & Chen, 2014; Ross & Sicoly, 1979). People consistently exhibit an egocentric perceptual bias—the tendency to project that most people act and believe as they do (Krueger & Stanke, 2001). As people project their own positions onto the wider community, social projection leads to a belief that their personal attitudes and behaviors are normal, common, and shared by the

[1] Note that we did not utilize structural equation modeling (SEM) approach in this study since some variables in the conceptual model were assessed by single-item scales, which are not appropriate for SEM (Bagozzi & Heatherton, 1994). Given that this study examines several interaction effects simultaneously, we believe that a moderated regression analysis is more appropriate for this study than SEM.

[2] It is worthwhile to note that social norms researchers have debated whether injunctive and subjective norms are interchangeable concepts. Some have used them interchangeably (e.g., Rimal & Real, 2005), while others have argued that they are conceptually and empirically distinct constructs (Park & Smith, 2007). Most researchers agree, however, that they are interrelated concepts as they both focus on others' attitudes toward a behavior. Given that subjective norms narrowly focus on perceived social pressures or dictates from specific others (i.e., 'important' others), injunctive norms were deemed more appropriate for this study as they involve a relatively larger and more equivocal target group and are therefore more subject to social projection or communication effects.

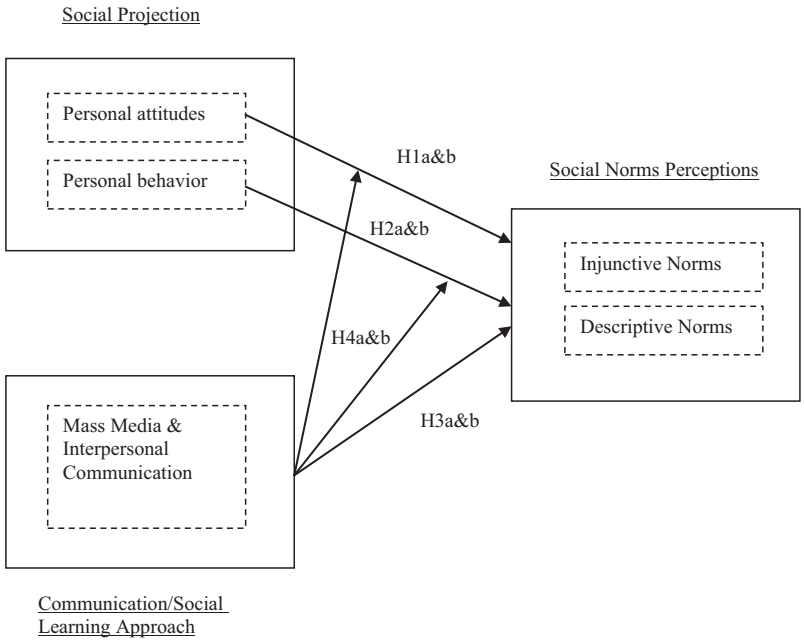

Fig. 1. Conceptual Framework and research hypotheses (* For visual clarity, specific links for subhypotheses (e.g., H1a, H1b, H2a, H2b) are omitted in this diagram).

general population (Fabrigar & Krosnick, 1995; Krueger, 2007; Krueger & Chen, 2014; Toma, Corneille, & Yzerbyt, 2012). As such, the social projection model suggests that self-referent information (i.e., perceivers' own personal views and behaviors) is a primary determinant of social norms perceptions since people rely on the self as a valid source of information, when making inferences about others' attitudes and behavior (Krueger, 2007; Krueger, DiDonato, & Freestone, 2012).

Egocentrism, selective exposure, motivated reasoning, and self-validation motives are several non-mutually exclusive causes of social projection (Marks & Miller, 1987). People reason egocentrically, and therefore self-referent information is seen to be the most relevant, important, or valid when making social judgments. Further, self-referent information, such as personal positions, is nearly always present and readily accessible in memory, and is therefore more likely to be retrieved and used as a heuristic to infer others' positions. Social projection also occurs as a result of selective exposure to others with similar opinions or behavior (e.g., friends and family) (Marks & Miller, 1987). People tend to associate with similar others, and this selective contact provides them with a biased and restricted sample of information about the true parameters of the larger social environment, thereby making people overestimate the number in the population who share their personal views (Ross, Greene, & House, 1977). Finally, self-validation can also serve as motivation for social projection. The desire for self-esteem maintenance and validating an individual's own attitude or behavior could lead to overestimations of prevalence (Marks & Miller, 1987). This is particularly pertinent in instances of deviant behavior or ethical issues, as estimating a greater prevalence or consensus of opinion becomes a form of self-validation (Flynn & Wiltermuth, 2010).

Taken together, the literature suggests that social projection is a powerful mechanism that determines people's perceptions of social norms. Although social projection has not been examined directly in the context of digital piracy, a few studies have suggested that it is likely to play a significant role since digital pirates are often engaged in selective affiliation and motivated reasoning. For instance, Cox, Collins, and Drinkwater (2010) found that illegal downloaders were significantly more likely to have a network of family and friends who also engaged in digital piracy. Similarly, Wang, Yang, and Bhattacharjee (2011) found that differential association with individuals engaged in unauthorized downloading was a significant predictor of downloading behavior. Digital piracy is also considered an ethical issue (Yoon, 2011). Hence, digital pirates may have a greater desire to validate their deviant behavior and attitudes, thereby estimating social norms in a self-serving way.

In sum, the literature reviewed above suggests that social projection is likely to affect the ways in which people generate perceptions of social norms regarding digital piracy. More specifically, people are likely to project their own attitudes, or behavior onto their perceptions of others, such that social estimates of others' attitudes (i.e., injunctive norms) and behavior (i.e., descriptive norms) are positively correlated with perceivers' own personal dispositions. Hence, we predict that:

H1. An individual's personal attitudes will be positively associated with injunctive norms (H1a) and descriptive norms (H1b) regarding digital piracy.

H2. An individual's personal behavior will be positively associated with injunctive norms (H2a) and descriptive norms (H2b) regarding digital piracy.

2.4. Communication exposure

Overall, the social projection literature suggests that projection based on personal dispositions is a robust and almost "ineradicable" heuristic mechanism (Krueger & Clement, 1994, p.596). As such, the social projection model focuses on the role of self-referent information in shaping one's judgments, leaving out much of the social or communicative contexts where the perceptions of social norms are formed (Spears & Manstead, 1990).

In contrast, communication researchers have demonstrated that people rarely make social estimates in the absence of knowledge about others, but utilize other-referent information drawn from different communication sources (Lapinski &

Rimal, 2005; Zhang & Reid, 2013). People constantly observe their social and normative environments, searching for signs of prevalent opinions or behaviors to validate their personal views (Gerbner, Gross, Morgan, & Signorielli, 1986; Lapinski & Rimal, 2005). Consequently, they use information obtained from communication sources to estimate consensus of opinion or prevalence of behavior pertaining to various topics, such as genetically engineered foods (Gunther & Christen, 2002), energy conservation (Allcott, 2011), high calorie snack food (Robinson, Harris, Thomas, Aveyard, & Higgs, 2013), crime (Shrum & Bischak, 2001), and the thin ideal (Park, 2005).

Media frequently portray particular events uncommon in real life, providing more foundation for individuals in their construction of social reality. The abundance of exemplars leads to overestimation of their occurrence in social distributions (Tversky & Kahneman, 1973) or to the perception that numerous people have favorable attitudes toward a particular behavior (Park, 2005). For instance, media portrayals of digital piracy may serve to heighten estimates of the prevalence of this behavior in society, even if the portrayals do not themselves condone the behavior. Given repeated examples of digital piracy in media, they may perceive that many people have positive attitudes toward the behavior in question (e.g., "if many people are doing it, they must have favorable attitudes towards it").

Taken together, the above literature suggests that communication plays a key role in affecting people's judgments on social norms perceptions. Communication processes determine which opinion or behavior is prevalent, normal, or popular, especially when people have limited direct observation (Shrum, 2001). Information provided via communication sources serves as "data" to gauge descriptive and injunctive norms particularly for moral or ethical issues that are debatable (Scheufele, 2007). Digital piracy occurs in an unobservable setting, and it is an ethical and moral issue. Therefore, communication plays a central role in shaping people's perceptions of social norms surrounding digital piracy. Specifically, frequent exposure to communication messages depicting digital piracy leads to a belief that it is prevalent in society and that many people have a positive attitude toward it. Hence, we propose that:

H3. Communication exposure will be positively associated with injunctive norms (H3a) and descriptive norms (H3b) regarding digital piracy.

2.5. Interaction between social projection and communication exposure

In summary, on the one hand, the social projection model assumes that projection is an egocentric process that leads to social estimates based on perceivers' own attitudes or behaviors. People anchor their social predictions directly and without much consideration of other evidence (Kulig, 2000; Orhun & Urminsky, 2013). On the other hand, communication research suggests that social norms perceptions should be explained at least partially by a generic social learning process, namely the induction of group properties from sample properties learned through communication sources (Lapinski & Rimal, 2005; Shrum, 2001). An important, but relatively unexplored, question is whether or how these two seemingly contrasting mechanisms interact with each other to affect people's judgments about social and normative environments, such as those surrounding digital piracy. Interestingly, studies on communication effects and social projection have progressed independently (Wojcieszak & Price, 2009). As a result, questions about whether these influential sources complement, reinforce, or compete with each other have not been sufficiently addressed (for notable exceptions see Gunther & Christen, 2002; Wojcieszak & Price, 2009). A review of the scant literature related to these questions provides qualitatively different predictions, as follows.

On one hand, the social projection model assumes the supremacy of self-referent knowledge (i.e., perceivers' attitudes or behaviors). As a result, the model proposes that information about others (i.e., other-referent information) obtained from communication sources should play an insignificant role in shaping one's judgments. This is because the self is the locus of consciousness and direct phenomenal experience, whereas the experience of the other is highly inferential and mediated by observation or communication channels.

Empirical studies have demonstrated that the social projection effect persists under conditions that minimize the opportunity for egocentric or heuristic information processing. For instance, the social projection effect was observed even when objective information, such as actual public opinion climates (Krueger & Clement, 1994), behavioral choices made by estimation targets (Orhun & Urminsky, 2013), or information about the entire population (Kulig, 2000) was given to participants. Likewise, in the context of digital piracy, the social projection model suggests that social norms perceptions will be biased toward those of the self, even if more objective information about downloading behavior in a given society is communicated.

On the other hand, communication scholars hold that communication environments provide people with a relatively more accurate "sampling frame" for social estimates and reduce the chances that people will make an error in their estimates by solely relying on their own attitudes or behaviors (Moscovici, 1985; Wojcieszak & Price, 2009). Communication factors can moderate the effect of social projection for at least two reasons. First, frequent communication could result in exposure to information that is more diverse. Encountering dissimilar perspectives might demonstrate to people that their views or behaviors are not as prevalent in the population as they would like to believe (Wojcieszak & Price, 2009). Similarly, the perception that the slant of news coverage is different from personal opinion mitigates the effect of social projection (Christen & Gunther, 2003; Gunther & Christen, 2002).

Second, presenting more information about other group members via different communication channels can reduce uncertainty and ambiguity, leaving less room for cognitive and motivational biases (Tversky & Kahneman, 1973). People engage in egocentric thought processes, or social projection, because estimating the characteristics of the public is difficult, ambiguous, and uncertain (Sechrist & Stangor, 2007). Hence, providing people with more information can decrease the degree to which they project their views onto others.

Only a few studies have empirically examined the interaction between social projection and communication effect. Further, they have produced mixed and inconclusive findings ranging from a non-significant interaction (Krueger & Clement, 1994) to a minimal interaction effect (Gunther & Christen, 2002). In sum, though interaction between the two factors is theoretically plausible, empirical support for this is not only limited but also inconclusive, and many of the claims reviewed above have yet to be tested empirically. This study thus seeks to advance our knowledge on social norms perceptions by testing the following hypothesis in the context of digital piracy:

H4. There will be a significant interaction effect between social projection and communication exposure, such that frequent exposure to communication sources can mitigate the effect of social projection on injunctive norms (H4a) and descriptive norms (H4b) regarding digital piracy.

3. Method

3.1. Data collection and sample

Participants in this study were recruited through a national online panel administered by a professional survey research company in the US. The panel is an opt-in, privacy-protected participant pool consisting of nearly one million members. The research company runs regular benchmarking surveys to ensure their panelists are representative of the US population. The research company limits the number of surveys members can take per week to ensure that members are not over participating. In addition, survey members are rewarded with non-cash incentives (e.g., charitable donations and sweepstakes entries) to discourage rushing through surveys just for the reward.

In late June 2012, invitation emails containing a link to the survey site were sent out to 3587 randomly drawn panelists between 18 and 34 years old, the age group in which digital piracy is most prevalent (Bhattacharjee, Gopal, & Sanders, 2003). Given that this survey assessed individuals' attitudes toward, and behavior related to, a potentially illegal or deviant activity, we assured respondents of strict confidentiality. As such, no identifying information other than age group and gender was collected via survey.

A total of 646 participants completed the survey, yielding a response rate of 18%. This relatively low response rate is not surprising given that the survey dealt with a sensitive topic like digital piracy. We excluded inappropriate ($n = 21$; e.g., duplicate) and incomplete ($n = 5$) answers. The final sample consisted of 620 individuals, of whom 275 (44.4%) were female and 345 (55.6%) were male. Nearly 40% of the respondents ($n = 242$, 39%) reported that they obtained at least one form of digital content through digital piracy in a typical week, consistent with existing statistics (e.g., Business Software Alliance, 2012).

3.2. Measures

3.2.1. Personal piracy attitude

Personal attitudes toward digital piracy were assessed by asking participants to indicate their feelings about digital piracy using a 5-item, 7-point Likert scale taken from past research (Igbaria, Iivari, & Maragahh, 1995). Cronbach's alpha was .93. The actual survey items used in this study and descriptive statistics are presented in Appendix A.

3.2.2. Personal piracy behavior

The extent to which individuals engaged in digital piracy behavior was assessed by asking respondents to indicate the number of digital products they obtained through digital piracy (10-point scale), and the frequency at which they engage in digital piracy (5-point scale) in a typical week. The two items were standardized before being combined. Cronbach's alpha, using the Spearman–Brown correction for a two-item scale, was .76.

3.2.3. Social norms perceptions: injunctive and descriptive norms

Previous research operationalized the concept of social norms perceptions by asking individuals to estimate the percentage of their peers engaging in the target behavior (i.e. descriptive norms) (Cho, 2011; Park & Smith, 2007) or who favor the issue in question (i.e. injunctive norms) (Zhang & Reid, 2013). Researchers often use single-item scales in assessing social norms perceptions or social estimates (e.g., Thomson, Siegel, Winickoff, Biener, & Rigotti, 2005; Wang, Ho, Lo, & Lam, 2011; Zhang & Reid, 2013). Likewise, this study asked participants to separately estimate the prevalence of attitudes and behavior by answering two questions (e.g., "What percentage of your peers do you estimate are in favor of digital piracy?", "What percentage of your peers do you estimate commit digital piracy?").

3.2.4. Communication exposure

The degree to which an individual was exposed to communication pertaining to digital piracy was assessed through a 2-item retrospective measure – media and interpersonal communication, respectively (e.g., "In the past 3 months, how often have you heard about digital piracy from people around you?"). Although media and interpersonal communication networks may have differential impacts on people's judgments (e.g., Tyler & Cook, 1984), this study was interested in the degree to which an individual utilizes other-referent information obtained from various communication sources. We therefore assessed *overall* communication exposure.[3] Cronbach's alpha, using the Spearman–Brown correction of a two-item scale ($\alpha = .64$), was slightly below the conventional cutoff score ($\alpha = .70$), but higher than the minimum cutoff score ($\alpha = .60$; Nunnally, 1978). It is suggested that researchers can accept values near of .60, especially if the factor has few items (Hair, Black, Babin, Anderson, & Tatham, 2006).

4. Results

We predicted that perceptions of social norms would be guided by perceivers' personal attitudes (H1a & H2a) and behaviors (H1b & H2b), communication exposure (H3a & b), and the interaction between them (H4a & b). To test these hypotheses, we conducted moderated regression analyses using two subordinate types of social norms perceptions (i.e., injunctive and descriptive social norms) as dependent variables. The data were analyzed using hierarchical regression analyses. In the first step, control variables such as age and gender were entered. In the second step, communication exposure and perceivers' personal attitudes and piracy behaviors were added to the model. In the third and fourth steps, multiplicative terms were entered to examine two-way and three-way interaction between communication exposure and perceivers' attitudes and behaviors. Before running moderated regression analyses, all variables were first standardized, as recommended by Aiken and West (1991).

4.1. Predicting injunctive norms

Table 1 presents the results of the moderated regression analysis predicting estimation of injunctive norms. A three-way interaction between communication exposure, attitude, and behavior was not included in the final model as a preliminary analysis showed that it was non-significant ($B = .03$, $p > .05$). Note that results are reported using unstandardized coefficients instead of standardized coefficients, as recommended by Friedrich (1982). In Table 1, we provide both unstandardized and standardized coefficients.

In terms of main effect, the results showed that personal attitudes ($B = .42$, $p < .001$) and communication exposure ($B = .27$, $p < .001$) were positively associated with injunctive norms. Thus both H1a and H3a were supported. However, personal behavior was not significantly associated with injunctive norms ($B = .07$, $p = .09$). Thus H2a was not supported. There was also a significant

[3] Note that we also conducted two separate regression analyses using media and interpersonal communication. In order to avoid multicollinearity, media and interpersonal communication and their corresponding interaction terms were entered separately in two regression models. The results were almost identical to those reported in this paper, suggesting that the findings would be similar regardless of whether two communication sources were analyzed independently or combined together. We have decided to report the findings based on overall communication exposure, since (a) our focus is on cumulative communication exposure, and (b) separate investigations of two communication sources make the result section unnecessarily redundant, complicated, and lengthy.

Table 1
Results of the moderated regression analysis predicting injunctive norms and descriptive norms.

Block	Variables	Injunctive norms		Descriptive norms	
		Unstandardized coefficients (B)	Standardized coefficients (β)	Unstandardized coefficients (B)	Standardized coefficients (β)
1	Age	−.11**	−.11**	−.12**	−.12**
	Gender	−.02	−.02	−.01	−.01
2	Age	−.02	−.02	−.04	−.04
	Gender	.05	.05	.07	.07
	Attitude	.42***	.42***	.22***	.22***
	Behavior	.07 (p =. 09)	.06 (p =. 09)	.21***	.19***
	Communication	.27***	.27***	.27***	.27***
3	Age	−.01	−.01	−.03	−.03
	Gender	.06	.06	.07	.07
	Attitude (A)	.40***	.40***	.21***	.21***
	Behavior (B)	.12**	.11**	.30***	.27***
	Communication (C)	.28***	.28***	.28***	.28***
	A × C	−.09*	−.09*	−.07 (p = .07)	−.08 (p = .07)
	B × C	−.06(p =. 11)	−.06 (p =. 11)	−.04	−.05
	A × B	.01	.01	−.09*	−.10*
4	Age	–	–	−.02	−.02
	Gender	–	–	.07	.07
	Attitude (A)	–	–	.20***	.20***
	Behavior (B)	–	–	.29***	.26***
	Communication (C)	–	–	.25***	.25***
	A × C	–	–	−.07 (p = .06)	−.08 (p = .06)
	B × C	–	–	−.10*	−.12*
	A × B	–	–	−.12**	−.13**
	A × B × C	–	–	.08**	.15**
R^2 (Adj R^2)	Model 1	.01 (.01)		.01 (.01)	
	Model 2	.33 (.33)		.25 (.24)	
	Model 3	.35 (.34)		.27 (.26)	
	Model 4	–		.28 (.27)	
F-change	Model 1–Model 2	97.69***		63.72***	
	Model 2–Model 3	5.20**		7.20**	
	Model 3–Model 4			7.38**	

* $p < .05$,
** $p < .01$,
*** $p < .001$.

two-way interaction between attitude and communication exposure ($B = -.09$, $p < .05$), suggesting that the relationship between attitude, communication exposure, and injunctive norms warrants a more careful interpretation.

To further examine the significant two-way interaction effect, we performed simple slope analyses (Aiken & West, 1991). As Fig. 2 shows, high levels of communication exposure moderated the positive relationship between personal attitudes and injunctive norms. Specifically, personal attitude was more strongly associated with injunctive norms when communication exposure was low (1 SD below the mean; $B = .42$, $p < .001$) than high (1 SD above the mean; $B = .33$, $p < .001$). The results indicated that high levels of communication exposure slightly reduced the effect of personal attitude on estimates of injunctive norms. However, the two-way interaction between behavior and communication was non-significant ($B = -.06$, $p = .11$). Therefore, H4a was partially supported.

4.2. Predicting descriptive norms

Table 1 reports the results of a moderated regression analysis predicting estimation of descriptive norms. The results were similar to those of a regression model predicting injunctive norms. In terms of main effect, personal attitudes ($B = .21$, $p < .001$), behavior ($B = .30$, $p < .001$), and communication exposure ($B = .28$, $p < .001$) were positively associated with descriptive norms. Thus, H1b, H2b, and H3b were supported. We also found a marginally significant two-way interaction between attitude and communication exposure ($B = -.07$, $p = .07$). The size and direction of coefficient of the interaction term was similar to those for injunctive norms described earlier. However, the results also showed a significant three-way interaction effect ($B = .08$, $p < .01$), suggesting that the interaction between attitude and communication exposure should be dependent on another condition (i.e., perceivers' behaviors).

To facilitate interpretation of this complex three-way interaction, we conducted post hoc analyses. The sample was divided into two groups: those who engaged in digital piracy (*piracy group*, $n = 242$) and those who did not (*non-piracy group*, $n = 378$). We conducted two separate moderated regression analyses for each group. For the non-piracy group, the two-way interaction term between attitude and communication exposure was significant and *negatively* associated with estimation of behavior prevalence ($B = -15$, $p < .01$). In other words, communication appeared to reduce the effects of personal attitude projection. In contrast, the two-way interaction was *positive* for the piracy group but non-significant ($B = .08$, $p = .17$). It appears that communication exposure played a different moderating role depending on the type of people involved. Explanations for, and implications of, these findings are discussed in the following section.

5. Discussion

This study aimed to deepen our understanding of digital piracy and social norms perception by exploring the sources and processes through which people make inferences about the social and normative environment surrounding piracy behavior. Drawing on

social projection and communication research, this study (a) identified two sources of social norms perceptions, namely perceivers' own attitudes and behavior (i.e., self-referent information) and communication exposure (i.e., other-referent information); and (b) explored the extent to which these factors influenced individuals' perceptions about injunctive and descriptive norms. In doing so, the present study explored whether two theoretically different mechanisms (egocentric heuristics via social projection versus social learning via communication exposure) competed with or complemented each other when affecting social norms perceptions regarding digital piracy.

5.1. The interplay between self-referent and other-referent information

First, the findings show that the perception of injunctive and descriptive norms surrounding digital piracy is informed by a rather complex interplay between different sources. Whereas previous studies focusing on social norms perceptions independently examined personal predispositions and communication sources (for notable exceptions see Christen & Gunther, 2003; Gunther & Christen, 2002; Wojcieszak & Price, 2009), the current study extended focus to the interaction effect between these two sources. The results show that social projection plays an important role in shaping social norms perceptions. However, we also find that communication exposure slightly moderates the association between perceivers' attitudes and injunctive norms. In other words, frequent exposure to different information reduces individuals' tendency to anchor on their own personal views. Although social projection is a robust mechanism, people maintain a subtle balance between self-referent information (social projection) and other-referent knowledge (communication exposure) when making social estimates. A possible reason is that communication sources provide individuals with relatively more diverse sampling frames for social estimates (Moscovici, 1985).

Second, it is important to note that the two-way interaction is contingent on another condition (i.e., perceivers' own behaviors) when estimating descriptive norms. The significant three-way interaction effect and the results of post hoc analyses both indicate that the nature of the two-way interaction between personal attitudes and communication exposure varies depending on perceivers' behaviors. To recap, for the non-piracy group, the two-way interaction was significant and *negative* ($B = -15$, $p < .01$), while it was *positive* ($B = .08$, $p = .17$) for the piracy group. Thus, for the non-piracy group, communication exposure mitigates the effect of social projection. Although not statistically significant, the positive association observed in the piracy group implies that communication exposure and social projection may reinforce each other. A possible explanation for the contrasting results is that social projection is strongly regulated by motivated reasoning (Marks & Miller, 1987). It appears that people who have not engaged in digital piracy are relatively more objective, such that frequent communication exposure substantially offsets the degree to which they rely on social projection. In contrast, the piracy group has a stronger motivational bias (e.g., self-validation) due to the need to justify their own piracy behavior. As such, the piracy group might have processed information from communication channels in a self-defensive or ego-enhancing way, compensating for the competition effect observed in the non-piracy group. Individuals often engage in biased cognitive processing that focuses attention on more supportive rather than opposing information (Marks & Miller, 1987). Further, consonant opinions may be more readily retrievable from memory than dissonant ones (Fabrigar & Krosnick, 1995). If all these processes occur, frequent communication exposures may result in a "double dose" and significantly boost the social projection for digital pirates. As a result, people

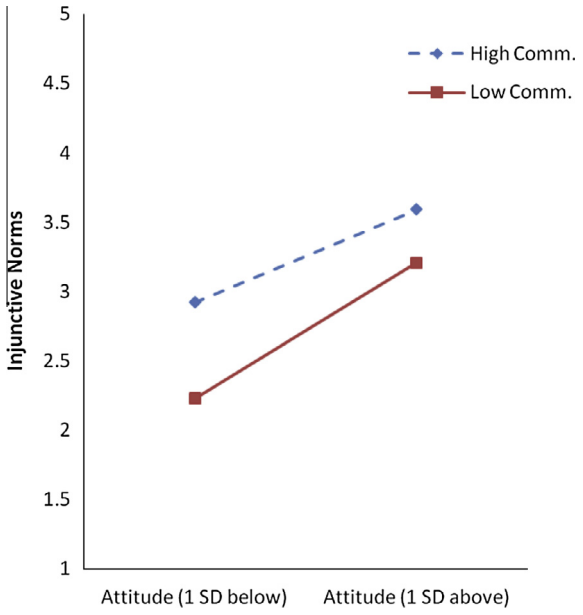

Fig. 2. Interaction effect between personal attitude and communication exposure on injunctive norms.

are likely to perceive that many others share their own views, becoming confident and comfortable in making social estimates anchoring on their own attitudes and behavior.

One remaining question is why the three-way interaction was not significant for attitudinal prevalence estimates (i.e., injunctive norms). A possible reason for this inconsistency is that perceivers' own behavior became more salient when they estimated the prevalence of others' behavior (i.e., descriptive norms), rather than attitudes (i.e., injunctive norms). Indeed, as Table 1 shows, the main effect of behavior was significant for behavioral estimates (i.e., descriptive norms), but non-significant for attitudinal estimates (i.e., injunctive norms). Thus individuals may overestimate prevalence of others digital piracy behavior based on their own behavior. However, they are less likely to project this to others' attitudes, suggesting that individuals are somewhat logical and selective when choosing different cues for social projection aimed at different targets (Marks & Miller, 1987).

5.2. Theoretical and practical implications

Overall, the findings provide important theoretical and practical implications. Theoretically, this study explores arguably one of the most important questions in social norms research: the investigation of diverse predictors of social norms perceptions in a simultaneous equation (Christen & Gunther, 2003; Krueger & Stanke, 2001). We contrasted and tested predictions derived from two different theoretical perspectives, namely egocentric social projection and social learning via communication exposure. Our findings reveal that the two theoretical mechanisms not only operate concurrently, but also inform each other through rather complex interactive processes. The findings might be helpful in explaining why previous studies have produced somewhat inconsistent findings related to the interaction between social projection and communication sources (Gunther & Christen, 2002; Krueger & Clement, 1994). Our findings suggest that communication sources can moderate social projection positively, negatively, or non-significantly, depending on the individual's own behavior (e.g., engaging versus not engaging in digital piracy), the level of motivation, or estimation target. Further, our research demonstrates the value of exploring multiple and interactive influences on social norms perceptions. As noted earlier, social projection research and com-

munication studies have progressed independently. Although these studies provide detailed insights into the contributions made by each factor separately, we suggest that an integrated approach is needed to accurately reveal the confluence of various sources that influence the perception of social and normative environments surrounding a behavior.

Our study also has practical implications for interventions aimed at curbing digital piracy behavior. As noted earlier, several studies have suggested that perceptions of positive social norms are a key reason why digital pirates continue to engage in piracy (Jacobs et al., 2012; Wang & McClung, 2011). Perhaps, the first step in addressing this is developing a clearer understanding of how social norms perceptions are formed through specific sources and processes. This study identified at least two important sources: social projection and communication exposure. The findings from this study suggest that behavioral change for digital pirates is likely to be difficult as they normalize their behavior through social projection. Further, communication exposure plays different roles depending on the individual's own behavior. On the one hand, communication messages designed to discourage digital piracy behavior may be effective as a preventative measure to reduce the effects of egocentric bias in those who do not yet engage in digital piracy. However, on the other hand, the idea warrants caution as it may also serve to reinforce the behavior of those already engaging in digital piracy. This may be because frequent exposure to communicated information highlights the number of people engaged in the behavior in question, thereby reinforcing its prevalence or popularity (Cialdini, 2003). Thus communication strategies designed to reduce digital piracy would, in fact, be counter-effective if they merely focus on highlighting the size of economic loss or the prevalence of digital piracy worldwide. Future research aimed at curbing digital piracy behavior may be able to illuminate these dynamics by examining and comparing various message-level variables.

5.3. Limitations and directions for future studies

The current study has several limitations that indicate directions for future research. First, its focus was on the social projection model, in which personal dispositions guide estimates of others' attitudes or behaviors (Krueger & Stanke, 2001). As this study is based on cross-sectional data and correlational analyses, the causal assumption deserves careful thought. Previous work has suggested that the relationship between personal disposition and social norms perceptions can be reciprocal, such that (a) the perceiver's attitudes can influence his/her estimation of social norms (i.e., social projection) and/or (b) perceived social norms can shape one's attitudes or behavior (i.e., conformity or social influence). Given the complex reciprocal relationships among these variables, the aim in the present study was simply to test the theoretical framework of the study, not to advocate one particular framework over another. Future research should examine more complex causal mechanisms by employing a longitudinal approach or an experimental study to determine how these alternative explanations may complement or contradict each other.

Second, this study utilized single-item scales to assess estimates of injunctive and descriptive norms. Though previous studies have used single-item scales to assess social norms perceptions (Thomson et al., 2005; Zhang & Reid, 2013), single-item scales are prone to higher measurement errors. In addition, their use made it difficult for us to examine the measurement validity (e.g., convergent and discriminant validity) of injunctive and descriptive norms.

Third, although the sample for this study was randomly drawn from a relatively large panel database of approximately 1 million panelists, they still represent a self-selected sample of those who are willing to be a respondent to an online survey. Also, our study sampled a population between 18 and 34 years old because digital piracy is most prevalent among this age group (Bhattacharjee et al., 2003). As such, the external validity of the findings is somewhat limited. Since this study focused on exploring theoretical relationships rather than estimating the univariate parameters of larger populations, the use of an online sample may not pose significant threats to validity. However, we suggest that future studies should employ a more generalizable probabilistic sample in order to validate the findings of the current study.

Finally, since we employed survey research for this study, we were not able to examine message-level variables that pertain to communication effects, such as the qualitative characteristics of media coverage. Although the current study has revealed the significant role of communication exposure, a more complete understanding of communication effects would be achieved through the exploration of specific elements of communication, such as the slant of news coverage or descriptive versus normative messages. This will provide clearer explanations of the findings presented in this study and potentially more practical communication strategies for reducing digital piracy.

Despite the aforementioned limitations, we believe that our findings provide valuable insights into digital piracy by specifying important factors and processes involved in the generation of social norms perceptions. Given that perceptions of positive social norms are a key factor facilitating digital piracy, the findings will aid researchers and practitioners in understanding the origins of social norms perceptions contributing to digital piracy.

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Appendix A

Personal attitude (M = 3.78, SD = 1.35)

Digital piracy is harmful.
Digital piracy is wise.
Digital piracy is useful.
Digital piracy is bad.
I like the idea of digital piracy.
(7-point semantic scale; 1 = strongly disagree, 7 = strongly agree)

Personal behavior

In a typical week, how many digital contents do you obtain through digital piracy? (Digital contents refer to music, movies, TV programs, videos, software, video and computer games, comic, books, pictures, and so on).
(10-point scale starting from 0, increasing by 3 each)
(*M* = 1.78, *SD* = 1.51)

In a typical week, how often do you engage in digital piracy?
(5-point scale; 1 = never, 5 = everyday)
(M = 1.68, SD = .87)

Injunctive norms (M = 6.52, SD = 3.05)

What percentage of your peers do you estimate are in favor of digital piracy?
(10-point scale starting from 0, increasing by 10% each)

Descriptive norms (M = 6.13, SD = 2.96)

What percentage of your peers do you estimate commit digital piracy?

(10-point scale starting from 0, increasing by 10% each)

Communication exposure (M = 2.49, SD = .96)

In the past three months,

How often have you heard about digital piracy from people around you?

How often have you received information about digital piracy from media?

(5-point Likert scale, 1 = never, 5 = very frequently)

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